

### REMARKS

This paper is responsive to an Office Action mailed May 2, 2006. Prior to this response, claims 1-14 were pending. After amending claims 1 and 3, claims 1-14 remain pending.

In Section 2 of the Office Action objections are made to the term "surface-normal feature". In response, claim 1 has been amended to consistently refer to the feature as a "surface-normal feature."

In Section 3 of the Office Action, claims 1-14 have been rejected under 35 U.S.C. 103(a) as unpatentable with respect to Zhuang et al. (US 2003/0148545; "Zhuang '545"), in view of Zhuang et al. (US 6,664,117; "Zhuang '117") and the Applicant's admitted prior art (AAPA). The Office Action acknowledges that Zhuang '545 does not disclose spin-coating with acetic acid and forming a PCMO film overlying a surface-normal feature. The Office Action acknowledges that Zhuang '117 fails to disclose forming a PCMO film on a surface-normal feature. The Office Action states that the AAPA discloses forming a PCMO film on a surface-normal feature, and that it would have been obvious to modify Zhuang '545 and Zhuang '117, in light of the AAPA, "because it is well known in the art to form vias or trenches for interconnection purposes." This rejection is traversed as follows.

An invention is unpatentable if the differences between it and the prior art would have been obvious at the time of the invention. As stated in MPEP § 2143, there are three requirements to establish a *prima facie* case of obviousness.

First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaack* 947 F.2d 488, 20 USPQ2d, 1438 (Fed. Cir. 1991).

Zhuang '545' discloses a device made from a Pt bottom electrode 14. Multiple layers of PCMO (typically 3 layers) are spin-coated onto Pt electrode 14 [0018]. After low temperature processing, the PCMO film changes from single-crystal form, to an amorphous layer 16a and a nanocrystalline layer 16b [0019]. The Applicant notes that there is not necessarily any correlation between the concentration of a PCMO solvent and the resultant crystalline structure of the PCMO film. Zhuang '545 fails to disclose spin-coating with different concentrations of PCMO solution, or a separate acetic acid spin-coating step.

Beginning at col. 2, ln. 44, Zhuang '117 discloses the preparation of a PCMO precursor. "The liquid precursor solutions are prepared by dissolving solid precursors in organic hydrocarbon solvents" (col. 3, ln. 11-12). "The solvent used is acetic acid. The stoichiometrical calculated three chemicals are mixed into acetic acid, and then refluxed, or reheated, in air for between about one hour to six hours" (col. 3, ln. 28-30). Zhuang '117 discloses the spin-coating of multiple layers of the above-described precursor solution. However, Zhuang '117 does not disclose a separate step of spin-coating with acetic acid, or spin-coating with different concentrations of PCMO solutions.

Fig. 1 of the AAPA shows a void created in a PCMO film, at the junction of a Pt electrode surface and a surface-normal feature, using a conventional spin-coating process. Alternately stated, Fig. 1 is an example of the inability of conventional spin-coating processes to form an effective PCMO film on a surface-normal feature.

With respect to the first *prima facie* requirement, the combination of the AAPA, with the Zhuang '545 and Zhuang '117 references, would suggest to an expert that it is not possible to form a PCMO film on a surface-normal feature. Alternately stated, there is no suggestion in the three references of a modification that addresses and solves the problem of forming a PCMO film on a surface-normal feature.

Considered from the perspective of the second *prima facie* requirement, even if an expert were given the Zhuang '545, Zhuang '117, and the AAPA as a foundation, there is no reasonable expectation that this expert could derive the claimed invention. In fact, the combination of references would suggest that there is no solution to the problem solved by the invention of claim 1.

With respect to the third *prima facie* requirement, even if the references are combined, they do not disclose all the elements of the claimed invention. None of the three references disclose a separate step of spin-coating with acetic acid. None of the three references discloses spin-coating with different concentrations of PCMO solution. None of the three references disclose the three-step sequence of: spin-coating with acetic acid, followed by a step of spin-coating with a low concentration of PCMO solution, followed by the step of spin-coating with a high concentration of PCMO solution.

Even in combination, the three references fail to explicitly disclose every limitation recited in claim 1. Further, the combination fails to suggest any modifications that would make these missing limitations obvious to an expert in the art. Claims 2-14, dependent from claim 1, enjoy the same distinctions from the cited prior art, and the Applicant respectfully requests that the rejection be removed.

It is believed that the application is in condition for allowance and reconsideration is earnestly solicited.

Respectfully submitted,

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